Tevatron QPM and Power Supply Checkout

What to do	When to do it
1. ____ From T26 verify that the QPM link is operational.	**NO** current on the bus.
2. ____ Check QPM parameters on page T32. (a) Verify that *Col* is selected on Row 18 and Column 50 of T32. Toggle this field to Col if it is not. "Col" for A2 set of power supplies. "File" for A3 set of power supplies. (b) Under "Compare Houses" type in A1 through F4 and take the Caution. Verify that there are no differences found between the Collider files and any of the QPM's.	**NO** current on the bus.
3. ____ On page T28 verify that the TECAR over current tolerance limits (for 980 GeV) are set at -100 amps lower and 4425 amps upper.	**NO** current on the bus.
4. ____ On page T31, auto-zero clocks and scalers. Clocks should be done first. Scalers that are *red* are out of tolerance and indicate that the VFC card should be replaced (tolerance should be set at 2%). Scalers that are *yellow* are noisy and should be noted in the Tevatron e-log.	**NO** current on the bus.
5. ____ Hardwire Loop Redundancy Test: (a) ____ On the Loop controller at Console 7, make the *bypass* and *loop* LED/s light up by pressing the "Loop Test" button. It may also be necessary to send a QPM reset and/or override bad refrigerator status on page T25. (b) ____ On page T27 interrupt on the "Begin HWL test" and take the *Caution*. It may be necessary to hit "Recover" if the process stalls before the entire ring has been checked.	**NO** current on the bus. After a Quench or access. May need to turn on the low leads to get a frig permit for a QPM reset.
6. ____ From page T27 do a ring wide HFU test (read *Software Release* 107). This can be done anytime after the tunnel is secure and the magnets are cold. Replace any HFU's that fail the test. Note: the QPM's will need to be charged before you fire and test them and when finished.	**NO** current on the bus. After a HFU change out or after a major shutdown.
7. ____ On page T22 verify that the voltage-to-ground trip limits are set to +/- 2790V.	Hipoting the Tevatron needs to be done after an access or when the circumstances require it.
8. ____ Hipot the Tevatron. (a) ____ Check the refrigerator status (you must have read *Opbull* 927A before proceeding). Verify that the VCB's are open. (b) ____ In the back racks, unlock the hipotter, set the Hipot switch to P1, select "Hipot P.S. and Bus," and raise the voltage to 500 volts. Current= _____ mA on the Medium (bottom) scale. (c) ____ With the voltage on the bus, check that all the cell differential voltage are zero (+/- 0.1 V) by selecting "Cell Volt" on page T32	You will need the frig permits on T25 Status page.

What to do	When to do it
(d) ____ Check that all power lead signals are zero (+/- 2mV) by interrupting on "Hipot Plot" on page T33 (e) Hipot the Tevatron to 1 KV. Current = ____ on the medium scale. (f) ____ Lock off the Hipotter.	
9. ____ QBS test (read *Opbull* 928). **Be aware of the status of the Sequencer, Ramp, low beta quads, and lead flows while setting up this test.**	The QBS test is performed right after the ramp is turned on
(a) ____ This would be a good time to verify on Page F3 that Quench Response is NOT disabled for any house. (b) ____ From page D69, load a 220 second timeline that creates minimal disruption for current users. It should include a module that contains a Tevatron reset ($41). (c) ____ From the Collider sequencer, run the "Recovery" aggregate. First check the status of the Low Betas and lead flows. (d) ____ From C49, activate the QBS test ramp (currently file 24). (e) ____ Close in the VCB's from page T21. (f) ____ From T25, turn on the Tevatron ramp. A normal temperature refrigerator permit is sufficient for QBS current.	Parts of steps a through f may be done in order to turn on the Tevatron.
(g) ____ For a ring wide test, check the following switches from T29 A2-A____ A2-B____ B2-A____ B2-B____ C2-A____ C2-B____ D2-A____ D2-B____ E2-A____ E2-B____ F2-A____ F2-B____ ____ Plot with no QBS selected	QBS Test, step g, needs to be done after a high field quench (>3000A), for the houses that quenched.
10. ____ Dump test: On page T22, be ready to interrupt on "LXPLOT Real Time Data." Press the dump button on the loop controller when the QBS current is at a 120 GeV peak. From the plot, verify that all 12 dump resistors are in the circuit. Remember to turn the lead flows back on before restoring the ramp.	Dump Test, needs to be done after any power supply or dump work and after a major shutdown. The Dump Test should be done during a QBS ramp
11. ____ After the ramp is back on reset the extrema on pages T22, T32 and T33.	Resetting the extrema, should be done whenever we turn on the Tevatron, after it is ramping

Spare copies of the Tevatron checkout can be found online at
http://home.fnal.gov/~baginski/interlocks.html

Operator(s) _____ Time/Date _____ 6/11/2006